

THE AURORA LINE IN THE SPECTRUM OF THE NIGHT SKY.

By LORD RAYLEIGH.

[Abstracted from *Proceedings of the Royal Society*, A100, 367-378, 1922.]

Exposures on isochromatic plates were made every night from February 26 to July 31, 1921, satisfactory records of the spectrum of the sky being obtained on 145 nights; the prism spectrograph was pointed north at an elevation of 45° . The green auroral line 5578, of unknown origin, previously found by several observers¹ to be present on ordinary nights in comparatively low latitudes, was recorded on about two nights out of three.

The intensity of the aurora line on ordinary nights does not seem to be related either to the amount of magnetic disturbance or to the transit of spots over the sun's central meridian. The observations showed quite definitely that near Newcastle the line, though not wanting, is ordinarily much less bright than near London, about 3° farther south; this is in agreement with the experience of others in England and America. There is no doubt of the genuine variation in intensity of the line from night to night—in general it remains strong or weak for several consecutive nights. It seems to differ in degree, kind, and origin from that in an auroral display, but the wavelength is the same.

Krypton was used as a comparison spectrum, and no doubt was left as to the fact that the krypton line is less refrangible than the aurora line. Some experiments to determine the origin of the latter were made, but the results were negative.—E. W. W.

¹ Welchert, *Phys. Zeit.*, 3, 366, 1902; Campbell, *Lick Obs. Bull.*, 5, 46, 1908. *Pub. Astr. Soc. Pac.*, 20, 218, 1917; Slipher, *Astrophys. Jour.*, 49, 266, 1919.

AURORA BOREALIS OF MAY 13, 1920.¹

By C. STÖRMER.

[Abstracted from *Comptes Rendus*, 172. pp. 1672-1673, June 27, 1921.]

Amongst the photographs of this aurora is a pair of special interest, taken simultaneously at Kristiania and Oscarsborg (27.36 km. apart) at 11h. 4m. 24s. G. M. T. It represents a long auroral ray, the position in space of six points of which have been determined. The heights of these points above the earth surface range from 192 km. to about 470 km., and the ray is thus remarkable for the high altitude of its lowest point as well as for the fact that it reached a level of almost 500 km. During a previous aurora, March 22-23 1920, the summits of the rays were found to be between 500 km. and 600 km.—M. A. G.

HEIGHT OF AURORA.²

By C. STÖRMER.

[Abstracted from *Geofysiske Publ.*, Kristiania, 2. No. 2, *Nature*, 107. p. 663, July 21, 1921.]

Simultaneous photographs of the brilliant aurora of March 22-23, 1921, were taken at Kristiania and Königsberg, 65.7 km. apart, the exposures being timed by telephone after the cameras were pointed to the same stars in Cassiopeia. The streamers had well-defined edges, and the heights of the ends of long rays were determined as 597, 550, 607, 562, 528, 485, and 519 km., respectively. The bases may be as low as 85 to 90 km., but the great heights of the edges are taken to indicate that the atmosphere must extend beyond 500 km.—W. W. B.

¹ Reprinted from *Science Abstracts*, Jan. 31, 1922, p. 38, §103.

² Reprinted from *Science Abstracts*, Jan. 31, 1922, p. 32, §84.